ABOUT RECENT EXCAVATIONS AT A BRONZE AGE SITE IN MARGIANA (TURKMENISTAN)

Sandro Salvatori

Abstract
A recently published book on the Adji Kui 9 Bronze Age site excavation (Murghab Delta, Turkmenistan), deserves close inspection in the context of the 3rd millennium BC history and archaeology.

Introduction

A full-scale overview of Central Asian archaeology, from the beginning of the research to the early 1980s, was published in 1984 by Ph. L. Kohl. A few years later, an appreciable synthesis was published by H.-P. Francfort [1] on the Shortughai excavations in north-eastern Afghanistan. The most interesting book on Turkmenistan is by Fred Hiebert [2] and provides a good updated survey of the archaeological research in Margiana up to the early 1990s.

Since that date, fieldwork has been carried out at a number of new and old sites, both along the Turkmenistan piedmont and in Margiana [3]. In addition, an international project aimed at providing an updated Archaeological Map of the Murghab delta [4] has been ongoing since 1990.

As one can perceive from the references quoted, the collapse of the Soviet Union has favoured the increasing presence in Turkmenistan and in other Central Asia republics, of western archaeologists [5] and the beginning of joint archaeological projects with local institutions and researchers. It soon became clear that different, irreconcilable, excavation methods and theoretical approaches were being used by the two schools.

As for excavation methods, two main opposing and antagonistic approaches were and still are at work: Approach 1 is an uncontrolled approach to excavation of architectural complexes without considering stratigraphic procedures and recording. Approach 2 points to understanding and recording cultural variability using archaeological stratigraphic methods as dictated by the evolution of the discipline all over the world.

A third, apparently harmonising behaviour (Approach 3), pays some attention to record stratigraphic sections (in the geological sense of the term) of the archaeological sites without employing proper stratigraphic excavation methods.

V. I. Sarianidi, both in Margiana (Togolok and

[1] Francfort 1989.
[2] Hiebert 1994.
[3] Jeitun: Harris *et al.* 1993, 1996; Masson and Harris 1994; Coolidge 2005; Anau: Hiebert and Kurbansakhatovn 2003; Parkai II: Khlopin 1997; Altyn-depe: Berezkin 2001; Kircho 1988, 1994, 2000, 2001b, 2001c, 2004; Kircho, Salvatori, Vidale n.d.; Alekshin and Kircho 2005; Ilgynly-depe: Solovyeva 1998, 2000, 2005; Solovyeva *et al.* 1994; Kasparov 1994; Korobkova, Sharovskaya 1994; Masson Berezkin, Solovyeva 1994; Berezkin, Solovyeva 1998; Ulug-depe: Boucharlat, Francfort, Lecomte 2005; Lecomte 2004a, 2004b, 2005, 2006, 2007; Lecomte, Francfort 2002; Lecomte *et al.*, 2004; Togolok 21: Sarianidi 1986, 1990a, 1990b; Togolok 24: Sarianidi 1998; Adzhi Kui 8: Sarianidi 1990; Gonur 1 South: Sarianidi 1993, 1998; Gonur 1 North: Sarianidi 2002a, 2002b, 2004, 2005; Gonur Middle Bronze Age graveyard: Salvatori 1993, 1994a, 1994b, 1995; Sarianidi 2001, 2007; Dubova 2004; Rossi-Osmida (ed.) 2002 a book we critically reviewed in the past (Salvatori 2003); Adzhi Kui 1 and 9: Salvatori 2002; Site 1211-1219: Cattani 2008a; Site 999: Bonora, Vidale 2008; Takhirbai 1: Cattani 1998; Takhta Bazar: Udeumuradov 1993; Merv: Herrmann, Masson, Kurbansakhatov (eds.), 1993; Herrmann, Kurbansakhatov (eds.), 1994, 1995; Herrmann, Kurbansakhatov and Simpson (eds.), 1996, 1997, 1998, 1999; Williams, Kurbansakhatov (eds.), 2001, 2002, 2003.
[4] Gubaev, Koshelenko, Tosi (eds.), 1998; Salvatori, Tosi (eds.), 2008.
[5] The new path was paved by former initiatives by French and American scholars and institutions (Deshayes (ed.), 1977; Kohl 1981; Gardin (ed.), 1985, 1988).

Gonur sites) and Southern Bactria (Northern Afghanistan) [6], and Rossi-Osmida, and Udeumuradov's excavations at Adzhi Kui 1 and 9 [7], followed Approach 1.

Approach 2 was employed at Hiebert's test trenches along the southern slope of Gonur 1 North and at his excavations at Anau; Cattani's excavations at Takhirbai 1 and Sites 1211-1219, in the Murghab delta; Salvatori's test trenches at Adzhi Kui 1 and 9; Anglo-Turkmenian excavations at the Neolithic site of Jeitun; University College of London (UCL) excavations and restoration work at Merv; French excavations at Ulug-depe; and excavations at Altyn-depe and Ilgynly-depe carried out by the last generation of Russian archaeologists from the Academy of Sciences of Saint Petersburg.

Imil Masimov's test trenches at Kelleli 1, 3 and 4 and Adzhi Kui 3 [8] followed what has been identified as Approach 3.

The volume we are reviewing here [9] explains why stratigraphic excavation, an approach almost universally accepted in archaeology, should be abandoned. A further considerable message of this book concerns the interpretation of historical processes. It contends that interpretation must not be derived from verifiable data, but rather from free use of the researcher's fantasy.

Although the content of this book needs many more pages of commentary, this review should be enough to give the reader an idea of why archaeological research should be shielded from unprofessional and untrained treasure hunters. For this reason only, some of the book's main topics will be discussed:

1) - Coherence and incoherence or "about the contradiction";

2) - Archaeological research methods and practice (about archaeological excavation);

3) - Regional studies and their methodology;

4) - Archaeological and historical interpretations;

5) - Anthropomorphic figurines.

Coherence and incoherence or "about the contradiction"

As for the methods of archaeological excavation dealt with on p. 18, the author writes that: "*The most difficult problem we have had to deal with is the re-education of technicians and workforce regarding correct archaeological excavation procedures*" because they were trained under the "*… old Soviet frontier school, which considered it superfluous to dig stratigraphic trenches …*". This statement would seem sharable, but what does "*correct archaeological excavations procedures*" mean if, a few lines above, he writes that "*it is obvious* [!!!] [10] *that, in these borderline condition it is not possible to carry out a text-book excavation*"?. Many examples would provide opposite evidence, but it seems enough to refer to the work of Kircho at Altyn-depe and Solovyeva at Ilgynly, in an equally difficult environment, as well as that of Salvatori [11] at Adzhi Kui 1 and 9, Cattani at Site 1211-1219 and Vidale at Site 999 in Margiana. Besides, proper stratigraphic excavations are usually carried out in even worse environments, and the list would fill hundreds of pages. A few among the many possible examples are in the western desert of Egypt [12] or at the excavations at Shahr-i Sokhta in the Iranian Seistan [13].

Furthermore, when asserting that "*… the old Soviet frontier school … considered it superfluous to dig stratigraphic trenches*" (p. 18), the author reveals that he does not know that Soviet archaeologists excavated a large number of "*stratigraphic trenches*" in Turkmenistan, both in the Meana-Chaacha [14] and

[6] Sarianidi 1977.

[7] Rossi-Osmida 2007. For AK1 see Rossi-Osmida 2006.

[8] Masimov 1979, 1981a, 1981b, 1984.

[9] Rossi-Osmida 2007. We prefer to use Adzhi Kui because it is the most commonly used spelling of the name in the scientific literature.

[10] Sentences in square brackets are mine as well as the bold in reported sentences.

[11] Readers will excuse me for this personal remark: Rossi-Osmida writes that I was at Adzhi Kui 1 and 9 "*… for a few hours, time enough to dig two small stratigraphic trenches in AK1 and AK9 …*" (p. 39). To be precise, I was there for days, with Masimov, Udeumuradov, Gubaev and the Italian team digging **stratigraphically** in two test trenches**.** His words not only are ignominious but also denote his ignorance and rather scarce field experience as he thinks that a few hours are enough to dig two test trenches in a proper stratigraphic way.

[12] Wendorf, Schild, Associates 2001.

[13] Tosi 1968, 1969, 1983; Salvatori, Vidale 1997.

[14] For example at Altyn-depe: see Kircho, Salvatori, Vidale n.d. and Alekshin, Kircho 2005: 13-78 and fig. 1.

in the Murghab area [15]. Unfortunately, "*stratigraphic trenches*" does not always mean "*stratigraphic excavation*"!

The author may not know that "*text-book excavation*" (cf. p. 18) means "*correct archaeological excavation procedures*".

Archaeological research methods and practice

A discussion on archaeological excavation methods cannot be considered complete after having examined the above contradictions. Many archaeological textbooks [16] have been written since the last century which also can be used to trace a history of archaeological methods and practices. Also known to archaeologists is that the practical use of the word "stratigraphy" is different if is used in a geological or archaeological context. Furthermore, this word has had different meaning through time in archaeology. Rossi-Osmida could profitably read the second edition of Edward Harris's book [17] to understand the difference between "stratigraphic section or trench" and "stratigraphic excavation".

The rare "stratigraphic sections" illustrated in this book (three altogether, but two are different versions of a same subject: p. 69 and pp. 71 and 89) not only have a disputable utility but also contradict each other.

Moreover, it is striking that the author does not provide any information about the internal deposits of the excavated rooms, as we would expect in any credible archaeological publication. Indeed, at the risk of emphasising the obvious, we have to recall that sections through archaeological deposits, when subjected to stratigraphic excavation, are very informative of the many activities linked to rebuilding or restoration and give basic information about the structural transformations, collapse, abandonment and/or more or less sporadic later exploitation of the site. Unfortunately, for the author of this book "… *it is obvious that any attempt at micro-periodization of AK9 must be purely* ***an academic exercise****, concentrating on individual habitations and structures, rather than taking the complete urban pattern of the citadel into consideration*" (p. 68). Single houses and structures and the urban organisation, as a whole, are two complementary and equally important aspects of the archaeological reasoning. What is evident, reading the book, is that Rossi-Osmida emulated Sarianidi in his methodological approach to digging Bactrian and Margiana settlements. The similarity also can be appreciated by comparing the section he published on p. 69 with that presented for Gonur North by Sarianidi [18].

Furthermore, the excavation methods and the graphic recording used at Adzhi Kui are not a surprise, knowing that excavations at the site were mainly carried out by V. Udeumuradov. The Russian archaeologist, in fact, considers the use of the stratigraphic method very disappointing [19] and supports the methods used in current (Sarianidi's) excavations in Margiana, affirming that they give the possibility of digging a much larger area in the same amount of time. The result was that Udeumuradov applied the Sarianidi method to the Centro Studi Ricerche Ligabue excavations at Adzhi Kui.

It is worth noting that the "stratigraphic section" illustrated on p. 89 does not agree with the one on p. 71. In the first one, the pit cut starts below the second, continuous yellow layer. In the second one, as evidenced by different colours, the cut appears to start from the base of the first dark green layer which lies immediately below the wall of room 27, forgetting that such a cut, if related with the pit, would have been intercepted the second (lower) dark green layer which, according to the drawing, seals the so-called "Ram Grave"!

Also surprising is the comparison he makes with the photo of a Sapalli-depe grave [20]. We hardly understand the correlation and similarities between the two features. A possible relationship is the round shape of the pit! The drawing of the Sapalli

[15] See, for example, the "stratigraphic trenches" at Gonur North and Togolok 1: Sarianidi 1990, and at Kelleli 1 and Adzhi Kui 3: Masimov 1981: Fig. 2.

[16] Just to mention some: Wheeler 1954; Frédéric 1967; Hester, Heizer and Graham 1975; Hole and Heizer 1977; Barker 1977; Joukowsky 1980; Francovich and Manacorda (eds.), 1990; Renfrew and Bahn 1991; Westman (ed.), 1994; Green 2002; Grant, Gorin, Fleming 2005.

[17] Harris 1989. Or the Italian translation of the first edition of the book.

[18] Sarianidi 1998, fig. 40.

[19] This is exactly what I was told by Udeumuradov when digging at Adzhi Kui 1 and 9, while a different position was assumed by the late Masimov that showed a strong interest for the stratigraphic method; Salvatori 2002.

[20] Askarov 1973, fig. 30. The referred picture from the Sapalli-depe publication shows Grave 27 and not Room 27.

Grave 27 [21] clearly shows that pit's cut starts above the floor of the room, which means that the pit was excavated throughout the fill of the room as almost all the graves unearthed at the site (see the drawings of Graves 21 and 33 [22], or Grave 29 [23] where the interference of the grave pits with the walls of the village is indisputable). The two cases presented by Rossi-Osmida are different. The Adzhi Kui "Ram Grave", in fact, was excavated before the building of Room 27, while the Sapalli graves were placed after the site was deserted. Sapalli-depe, as well as Djarkutan [24], once abandoned, was used as a burial ground. The same happened at the Middle Bronze Age site of Gonur 1 North [25], and at the Late Bronze Age sites of Togolok 24 [26], Togolok 21 and 1 [27].

There is also a problem in the claimed relationship between the "Ram Grave" and Room 27. The room, according to the graphic record at p. 80, is built up in phase 1 B and is considered linked to a persistent Ram cult [28]. But the stratigraphic section shows that the pit of "Ram Grave" was excavated before the walls of Room 27 were built and that there is no relationship between the grave and Room 27. Is it possible that an non-existent relationship could provide "*the clearest evidence of a persistence of a cult*" (p. 79) in Room 27?

Other major inconsistencies appear elsewhere in the book. At p. 58 different roofing systems are described for the Adzhi Kui houses, but there is no graphic or photographic evidence of the material used to made the roofs.

A first phase of a "sanctuary" (p. 77) was built during sub-phase 1 B. According to Rossi-Osmida, it was related to Room 54 [29] which, together with Rooms 27 and 34 is part of a group of isolated chapels. The Temple is described (p. 84) as a structure made by Rooms 54 and 60 (the last is said to be "*the natural extension of R54*"), but R60 is depicted as pertaining to sub-phase 2 A in one figure (p. 80), with some plan differences in another one (p. 87). There is also a third variant at p. 93. According to the author (p. 86) in sub-phase 2 [sic!] "*R54 and R60, whilst maintaining a unitary character, are separated by a wall which would seem to underlie the function of R54 as a* naos …". If the walls of Room 60, according to the 1 B sub-phase plan (p. 80), were not yet built up, it is evident that this structure cannot have a unitary character.

This *fluctuating* structure is compared with the so-called Sin Temple, Level II, at Khafaje, whose layout remained unchanged from Level I to Level V, and is some centuries older. Probably the author's intent was to look for a formal relationship. If so, why not compare the Adzhi Kui structure with the Abu Temple at Tell Asmar (Archaic Shrine I) [30], or with the 'Square Temple' [31] at the same site? But this would be a very funny play because the Adzhi Kui structure we are dealing with ultimately is a two-room structure and does not have anything in common with the above-mentioned Mesopotamian architecture. It could be more profitably compared in a general way to Rooms 93 and 154 of the "Palace" of Gonur North [32].

Continuing with the description of the "Temple," he states that "… *immediately outside there is a wall which runs from the northern entrance (where a typical* [sic!] *wall structure reveals the presence of a staircase to a tower) …*" (p. 87), but there is no evidence of this supposed staircase, and there is no evidence in the book to support the hypothesis that the structure was a Temple.

The intent "*to … provide specialists with proper documentation for the elaboration of acceptable hypothe-*

[21] *Ibidem*: Tab. 7 at p. 149.
[22] *Ibidem*: Tav. 11.
[23] *Ibidem*: Tav. 6.
[24] Askarov 1977.
[25] A Late Bronze Age graveyard of about 600 unpublished graves was excavated by Sarianidi on top of the mound: Dubova 2006: 41.
[26] Sarianidi 1990.
[27] P'yankova 1989, 1994.
[28] "*Regarding R27 … the clearest evidence of the persistence of a cult is presented by the stratigraphic sequence of the 'grave of the ram'*" (Rossi-Osmida 2007: 81).
[29] See sub-phase map at p. 80.
[30] Delougaz, Lloyd 1942: Pl. 19B.
[31] *Ibidem*: 176, fig. 133.
[32] Sarianidi 1998: fig. 38.

ses only one possibility presents itself, the one that has always been with us: excavate and document as far as possible, [and] *provide certain and verifiable data*." (p. 16) does not seem to have been honoured. Let us also consider how many times radiocarbon determinations are mentioned (e.g., p. 72). The only one cited is from a 1997 excavation at the site [33], and it is mistakenly reported [34]. No positive archaeological evidence (i.e., stratigraphic, contextual material assemblages and radiometric determinations) is provided for the chrono-cultural placement of the asserted sub-phases so that the above sentence is only a rhetorical exercise. Last but not the least is the author's description of the relationship among pits [35] nos. 4, 19 and 18 in Room 60 (p. 85). He says that pit 18 "*have been excavated above pits 4 and 19*" [i.e. pit 18 cuts through pits 4 and 19]. However, the graphic on p. 82 shows that pit 19 cuts through pit 18, and pit 4 cuts through pits 19 and 18! The legend reveals a mistake in the plan.

Regional studies and their methodology

The author provides many "professional" tips for the archaeologist on pages 30-36. Among the topics are regional surveys and the use of working and interpretative tools for dealing with different data categories provided by the complex fields of settlement and environmental archaeology. The section dealing with Margiana Bronze Age archaeology can be incoherent and confusing because he arbitrarily overlaps different points of view with divergent interpretations:

1) - *The problem of site hierarchy and the utility of surveys in archaeology*. Anticipating that archaeologists are well aware that surface evidence is only a segment of archaeological data, we have to reaffirm that this discipline, though limited by different constraints, allows us to describe the distribution of archaeological sites in discrete territories within a diachronic as well as synchronic framework [36]. No archaeologist would think that surveys are antagonistic or antithetical to archaeological excavation. On the contrary it is a valuable and effective tool in widening our archaeological database toward a different heuristic model than that of archaeological excavation, but instead is strictly correlated and interfaced with it.

We can tell that the picture coming out of the regional survey carried out by Masson, Sarianidi and Masimov in the Margiana area between 1950 and 1980 revealed a densely populated Bronze Age delta with a variety of archaeological sites and settlements differing in size and, possibly, function and chronology [37]. The non-systematic character of the first surveys produced the image of site clusters that were thought to be oases. The micro-oases theory is clearly derived by the easy equation between the present-day geomorphologic and environmental assets of the delta characterised by sand ridges and covers and thought to be equal with those of the Bronze Age. Each of the detected clusters displayed sites in a variety of sizes, though marked by a single major settlement. Test trenches and full-scale excavations allowed Masson, Sarianidi and Masimov to build up a first, provisional, diachronic Bronze Age sequence of the delta. In the entire delta, however, one site, Gonur 1, surpassed all the others in size. At a closer examination this settlement, about 30 ha. large, was identified as the sum of a larger site (Gonur 1 North) dating to the Middle Bronze Age and a smaller one (Gonur 1 South) dating to the Late Bronze Age. The south-

[33] Salvatori 2002: p. 119

[34] The date is actually SC535c: 4420 ± 110 1σ cal. 3330-2910 BC or 2σ cal. 3500-2700 BC (94.3% 3400-2700 BC). The problems concerning this date are of two types. The first is the high deviation value; the second is that the date does not fit the materials (mainly pottery) contextually picked up from inside the bell-shaped pit detected at the base of the trench sequence. It is not a matter of the charcoal sample which did not come from an African Baobab tree as suggested by the book's author, but of post-depositional disturbances affecting the deposit of Stratigraphic Unit 17a, the upper one in the bell-shaped pit.

[35] Not wells as in the text (p. 85).

[36] Ammerman 1981; Banning 2002; Wilkinson 2003.

[37] For an organic synthesis of the Soviet research in Margiana, see Hiebert 1994: 15-28. Site size, as from surface evidence, is considered a reliable measure because a number of excavated sites showed that there is a direct correlation between surface evidence and settlement size. This does not mean that the real size of the site is equal to the surface spread, but that almost all sites in an homogeneous environment produce a substantially homologous spreading effect due to both wind and water action. It is on this correlation, which, we repeat, does not mean exact coincidence, that most of settlement archaeology studies are based subsequent to the pioneering work of Robert MaC. Adams in Mesopotamia (Adams, Nissen 1972) and Henry T. Wright in Khuzistan (Wright 1979) as well as the interesting experimental work of Armando De Guio (De Guio, Secco 1988).

ern depe was completely excavated between the end of the '80s and the beginning of the '90s of the last century, and was almost 1.5 ha in size [38]. The northern one, which proved to exceed 15 ha after the excavation, revealed well planned monumental architecture, a number of complex architectural aggregates, segregated compounds with different functions, and monumental graves inside the imposing city wall. The Middle Bronze Age city has no parallel in size, monumentality and richness in the entire delta [39]. Moreover, a huge coeval cemetery was located to the west of the town, and about 4,000 graves were excavated [40].

Rossi-Osmida tells us that "*… some sites have been reconstructed on top of pre-existing ones, others were abandoned and reconstructed nearby, thus occupying a larger area*" (p. 33). Yet any surface survey takes into account the location of different material assemblages, both in the case of depe features and low or flat dispersions. A considerable problem comes from depe formations like Togolok 1, which has never revealed on the surface the presence of Middle Bronze Age materials, and only the deep test trench excavated by Sarianidi at the site attested a base layer pertaining to that horizon. Moreover, as often mentioned [41], geomorphologic changes in the delta are responsible for the very low or non-visibility of the Early Bronze and Chalcolithic sites.

Rossi-Osmida's attempts to criticise the Middle Bronze Age hierarchical pattern emerging from regional survey data is highly disappointing! He writes (pp. 33-34 and 45) that AK9 (a MBA site) is 6.25 ha and AK1 (a site which mainly pertains to the Late Bronze Age) is at least 14 ha, and the graveyard in between is about 10 ha. large. The site covers an area at least 30 ha and is as large as Gonur [42]. But Adzhi Kui 9 has been completely excavated, and its size does not exceed 0.50 hectares! An instrumental survey of the depe made in 1997 showed a 1.7 ha *ca.* extension of the mound-like archaeological evidence [43]. This means that, just as at Gonur 1 North, the surface spread of collapsed architectures and artefacts has produced a larger surface feature which always happens with settlement debris. Typically, we can use surface size evaluations to try to understand the general settlement pattern and dimensional hierarchies.

Furthermore, in a previous paper [44] the author writes that the AK1 settlement is 1,433 m^2 wide or 0.14 ha and not 14.0 ha, as he asserts in the book. According to another instrumental survey [45], the mound does not exceed 3 ha.

As for the graveyard, we can only say that graveyards are not living settlements and have never been considered in settlement pattern analyses nor in attempts to provide settlement hierarchies or rough evaluations, unless excavated, of the population density. Rossi-Osmida's use of misleading and falsified data is rather unusual in archaeological scientific literature.

In fact, AK9's size corresponds to that of a small fortified village (not a citadel [46]) in the range of small coeval settlements of the Kelleli area (Kelleli 3 is 0.1 ha), though it is more than two times smaller than Kelleli 4 (1.18 ha). The evidence points to Adzhi Kui 8, with an estimated size of about 8 ha., as the largest site of the Adzhi Kui Middle Bronze Age cluster of settlements.

The hypothesis advocated by Sarianidi about the centrality of Gonur during the Bronze Age Margiana is disputable in many respects, but not in the sense that Gonur 1 North does not represent, on the basis of present day evidence, a proper central place in the area. The size of the settlement, the imposing fortification system, the complexity and well planned architectural layout of most of the buildings, the richness and complexity of the graves inside the urban walls, etc., which have no parallels in the region, all point to its leading position in

[38] Sarianidi 1993; Hiebert 1994: 27.
[39] Sarianidi 1998, 2002a, 2002b, 2004, 2005.
[40] Salvatori 1993, 1994a, 1994b, 1995; Sarianidi 2001, 2007; Dubova 2004.
[41] Salvatori, Tosi 2008b.
[42] Rossi-Osmida 2002 p. 34: "*The whole therefore covers an area of at least 30 hectares, a figure very close to that of Altyn-depe, which has been calculated at 26 hectares*".
[43] Salvatori 2002: 113 and fig. 29.
[44] Rossi-Osmida 2006: 49.
[45] Salvatori 2002: 108 and fig. 3.
[46] Here, as elsewhere in this book, the terminology is incorrect. A citadel is a fortress in a commanding position in or near a city. Here, as well as in Margiana contemporary examples (AK 8, Kelleli 3 and 4), we are dealing with a fortified village.

the settlement pattern as well as the political assets of the region, as many archaeologists recognise [47]. Whether this means, as claimed by Sarianidi [48], that the city was the seat of a King or, as others think [49], a proto-urban phenomenon and a chiefdom type of power it needs more scientific debate.

By criticising settlement pattern and site hierarchy approaches, Rossi-Osmida reproduces a figure (p. 32) from a recent book by Sarianidi [50], copied in turn from a previous paper [51]. To be properly understood, this figure, which illustrates the regularity of the distances of second level Middle Bronze Age sites from the indisputably larger site of Gonur 1 North, should be superimposed upon another graphic elaboration – the tessellation graphic which shows, in a different way, the meaningful pattern of different site locations in the area according to their size [52]. This approach can be verified with a rank-size analysis [53] that confirmed that size differences were really organised according to the central place rule [54].

Contrary to the opinion of a well known Italian geographer (Rossi-Osmida: pages 34-35), used to invalidate tessellation or the Thiessen polygon method, this analytical tool has not been abandoned by archaeologists [55]. These models can be profitably applied, with an approximation and simplification value, in geomorphic or physiographic homogeneous regions (like the Murghab delta). Interpretative processes in archaeology cannot be equated to those of other disciplines because of a substantial difference in the nature of the data.

Moreover the heuristic value of such a method is self evident when used to highlight the presence of spatial regularities in the settlement pattern of specific cultural phases in the geomorphic homogeneous region of the Murghab delta. In this case the three methods used have converged into a hypothesis of a structured distribution determined by spatial rules connected to human group dynamics and to the structural complexity of the political and administrative forms of territorial management. A quite different pattern could be expected if the distribution were determined by randomly distributed physiographic markers [56].

Rank-size analysis [57] also points to a not random settlement size distribution. The relationship of sizes among the sites is also validated by archaeological excavation size data, if the ratio between AK9 (0.50 ha ca.) and Gonur 1 North (15.5 ha ca.), after the sites have been completely excavated appears to be 1 to 30.

2) - *Archaeological surveys visibility.* Settlement archaeology has always taken into deep consideration the visibility problem which has peculiarities linked to each different environmental system. The geomorphologic studies carried out within the Archaeological Map of the Murghab Delta project describe the main time-dependent transformations of the delta resulting from the differential accumulation process of alluvial deposits to the intrusion of northern sands into the deltaic system [58]. In the first phase of the Masson, Masimov and Sarianidi surveys, these phenomena, in the absence of archaeology-related geomorphological research, were ignored or underestimated. However now we can intermingle the archaeological data with a more detailed environmental history to understand population trends in a diachronic perspective. Thus work is still ongoing for better knowledge of the geomorphologic dynamics in the area and is producing new substantive data to deal with the visibility problem.

[47] e.g. Francfort 2007.
[48] Sarianidi 2005.
[49] e.g. Francfort 2007: 106. Francfort, unfortunately, does not take into consideration important evidence about the so-called Oxus Civilisation. There are clear and important differences between the Middle and Late Bronze Age in terms of precious goods circulation, architectural complexity, trade routes etc. (see Salvatori 2008b).
[50] Sarianidi 2005: fig. at p. 24.
[51] Salvatori 1998: fig. 6.
[52] *Ibidem*: fig. 3; *Idem*, 2004: fig. 4.
[53] Johnson 1980, 1982; Falconer-Savage 1995; Drennan-Peterson 2004.
[54] Salvatori 1998, 2004; 2008c.
[55] See, for example, the application of Thiessen polygons in Wilkinson 2004: 146-148 and figs. 7.4 to 7.9 with all the possible constraints which we can expect from their application to survey data.
[56] Salvatori 2008c: 60.
[57] *Ibidem*: fig. 5.3.
[58] Cremaschi 1998.

The analysis of the diachronic distribution of archaeological evidence in the delta surfaces (mainly alluvial deposits, dune ridges and sand expanses) has produced a meaningful and articulate (this does not mean complete) picture of the settlement pattern from the Middle Bronze Age to the Parthian-Sasanian period [59].

Visibility of archaeological evidence pertaining to periods older than the Middle Bronze Age is dramatically limited if not altogether occluded by the deep alluvial deposit which characterises the southern sectors of the delta and, in a decreasing measure, the central sector and the sand covering its northern sector. Nevertheless, as stated elsewhere [60], the lack of Chalcolithic and Early Bronze Age evidence on the actual surface is almost surely due to the cumulative effect of the above-mentioned phenomena. The retrieval of Chalcolithic pottery and correlated mud-brick architectural features below the city wall of Gonur 1 North [61] and at Adzhi Kui 9 and 1, in the central sector of the delta, is now enriched by the evidence of an anthropic level with, unfortunately, very eroded sherds 15 km to the west of Merv buried about nine metres below the surface and associated with a C14 date which, when calibrated, points to the mid 4th millennium BC [62]. This validates Cremaschi's description of the alluvial build-up of the Murghab delta. The available data tell us that possible Middle Chalcolithic materials in the Merv area are buried under *ca*. 9 m of alluvial deposit while 55 km to the North, at the height of Gonur, they are found about 1/1.5 meters below the alluvium. Yet, about 30 km to the North of Merv, close to the fortress of Garry Kishman, not better specified Bronze Age pottery was found at 1.50 m below the present alluvial surface [63], while Final Bronze Age and Iron Age pottery lay on the actual alluvial surface. Late and Final Bronze Age evidence is visible at the head of the alluvial deposit (actual surface) in the Takhirbai area (ca. 13 km to the north of Garry Kishman and 43 km north of Merv) while at the same height, but 7 km to the west, not specified other than being Bronze Age pottery has been found again at 1.50 m below the alluvium at Site 55 [64]. A C^{14} date (3880 ± 125 cal. 1 σ 2560-2140 BC) has been provided from a lens of charcoal and animal bones included in the upper part of a massive bioturbated sand deposit which provides a *post quem* reference for the Bronze Age pottery found immediately above [65]. This last data could point to differential rates of alluvial deposits from one place to another due to different morphological elevations and the activity of the river branches, a complex situation which needs more fieldwork to be fully understood.

3) - *The climate and its effects on the environment*. On p. 27, the author says that "*It has been noted for some time that the period of aridity which influenced Asia Central* [sic!] *and Turkmenistan in particular happened from the Neolithic to the Bronze Age; that is between the V and IV millennium BC …*".

A major climate change is at the basis of the Pleistocene to Holocene transition, giving way to fast environmental changes occurring in tandem with a number of dependent and independent variables (geologic, tectonic, idrogeological, anthropic etc.).

The basic problem in Southern Turkmenistan and the Murghab delta is the paucity of multidisciplinary research on palaeo-climatology [66]. Nevertheless, it seems that the period between the V and IV millennium BC falls inside a wetter period, despite Rossi-Osmida's statement to the contrary. For example, this is confirmed by Lioubimtseva (2004: 508): "*The mid-Holocene was associated with an increase in precipitation in the Kyzyl-Kum desert, where the Holocene climatic optimum is known as the Lavliakan humid phase and has been dated by radiocarbon in different archaeological sites from 8000 to 4000 years BP* [6000 to 2000 BC], *with a maximum around 6000 years BP* [3000 BC]" [67]. In an hyper-arid environment, like that of Central Asia, the effects of minor climate changes could also have had significant effects on specific environments where the human

[59] Salvatori 2004, 2008c; Cattani, Salvatori 2008.
[60] Just to cite the last: see Salvatori, Tosi 2008b.
[61] Sarianidi 2005: 35.
[62] Cerasetti, personal communication.
[63] Cremaschi 1998: fig. 5.
[64] *Ibidem*: fig. 4.
[65] *Ibidem*: 18.
[66] Lioubimtseva 2004: 508.
[67] Cfr. also Kohl 2007: 188.

population was concentrated (because of localised water resources like the Murghab delta). It is well known that climate change is a complex phenomenon and a continuous process [68]. For example, looking at interdisciplinary studies such as those carried out by the ACACIA project in north-eastern Africa (Egypt and Sudan) [69], it clearly emerges that environmental changes are the result of a processual climatic change. Providing an archaeological frame to environmental changes in the Murghab delta should be considered of the utmost importance [70].

Much more difficult to evaluate, but very suggestive, is the hypothesis advanced by Lecomte and Francfort of environmental changes induced by the human overexploitation of water resources through increasing use of irrigation channels as a response to a demographic growth which: "*… ont fini par empêcher les écoulements d'atteindre les parties distales des deltas, les rendant progressivement inhabitables par manque d'eau et favorisant de la sorte l'avancée du désert*" [71].

The anthropic variables have surely helped the phenomenon, but they hardly were the only at work [72]. The sand intrusion, as we can understand from the archaeological data, seems to have been a fast phenomenon. The data show a substantial growth of the settled area during the Late Bronze Age [73] and a dramatic reduction at least at the beginning of the Final Bronze Age (considering also the Incised Coarse Ware sites). Moreover, in the southern section of the delta, Final Bronze Age and Iron Age sites are on the present alluvial surface pointing to a change in the river activity. The river is no longer depositing alluvium but instead is cutting through the previously built up deposits.

If Sarianidi's work on Late Bronze Age sites has not produced reliable data (pottery sequences, settlement sequences and absolute sequences at a regional level) to help in reconstructing the pattern of settlement fluctuation during the Late Bronze Age, it is still possible to establish some well grounded points:

a) The Murghab delta is a dynamic feature (subaerial); the higher alluvial deposition rate at the foot of the delta, in comparison with its middle and northern sectors, is well stated, while we have only scant data to measure diachronic variances of water flux speed and the deposition rate of the different branches of the river. A further phenomenon, like the beginning of the river incision activity which could have affected the deposition rate, cannot yet be measured.

b) Fast sand intrusion in the delta occurred during the final phase of the Late Bronze Age. The phenomenon was possibly active, but at a very low rate, all along the delta history. Anyway, we know that at least during the early Late Bronze Age, the alluvial deposition was still active in the Gonur area. During this period, we see the formation of an alluvial deposit between a first and a second architectural phase at Gonur 1 South [74] which has been radiocarbon dated in the first two centuries of the 2nd millennium BC (3068 ± 75 = Oxcal. 1 σ cal. 2130-1820 BC [56.6%: 2040-1870 BC]).

During the early Late Bronze Age, settled areas in the delta were surely expanded as demonstrated, also in the north-eastern sector, by the new settlement of Auchin 1 and its satellite cluster of small sites.

Generally speaking, only in an advanced stage of the Late Bronze Age did sand intrusion prevail over alluvial deposits. This dramatic phenomenon occurred around the mid 2nd millennium BC as proven by hundreds of ICW campsites located above the sand cover almost everywhere in the Delta [75].

c) There is archaeological evidence of different settlement types in the southern part of the delta during the Final Bronze Age (Takhirbai 3 period): 1) traditional (since at least the Middle Bronze Age) well designed structures built with mud-bricks (Masson 1959: Fig. 5; Sarianidi 1990: 54); 2) set-

[68] Butzer 1978; and in arid environments in particular: Tsvetsinskaya *et al*. 2002; Mayewski *et al.* 2004; Lioubimtseva *et al*. 2005; Brooks 2006.
[69] Kuper (ed.), 1989; Bubenzer, Bolten, Darius (eds.), 2007.
[70] Salvatori 1998.
[71] Lecomte, Francfort 2002: 645.
[72] We are possibly faced with a matter of scale because some of the artificial canals detected in the Bronze Age Murghab delta "*… do not seem to have an irrigation function, but rather to regulate the watercourses*" (Cremaschi 1998: 17).
[73] Salvatori 2008c: fig. 5.18.
[74] Cremaschi 1998: 18.
[75] Cattani 2008b.

tlements of semi-subterranean houses in the same area (around the Takhirbai sites cluster), (Cattani 2008a). These semi-subterranean houses are of the same type known from the Tazabagyab agro-pastoral sites to the south of the Aral Sea (Khoresmia) (Itina 1977, Figs. 9-11), and inside the houses, both wheeled pottery of the Takhirbai 3 type and meaningful amounts of ICW pottery completely similar to the Tazabagyab production [76] were found.

It is hardly possible that other Final Bronze Age settlements could be buried below the alluvial deposit to the south of the Takhirbai area, as suggested by the Iron Age materials and sites on the alluvial surface around Takhirbai and to the south of this area. Moreover their very negligible presence to the north strongly points to a remarkable southern shifting and contraction of the settled areas during this period.

The following Iron Age settlement pattern shows the co-existence of mixed systems partly exploiting (mainly in the western part of the delta) the still active branches of the river and partly building up a new idrographic network throughout a structural, perhaps centralised control of water resources [77].

The new phase of delta exploitation (Iron Age) confirms the southern shifting of the centre of mass of the settlement pattern below the axis Takhirbai-Togolok which represents its northern border and where new settlement aggregates concentrate along the banks of currently active branches of the easternmost Murghab river system [78].

The weight of each variable (climatic, anthropic, hydrodynamic, geomorphologic, tectonic, etc.) is not yet clear. But if we try to understand the role played by these and other possible variables in a systemic perspective, we will surely understand better the diachronic and synchronic complexity that the natural and anthropic Murghab system presents to us.

Returning to the book under review, another striking inconsistency can be found on p. 123: "*The first attempts at irrigation with water courses appeared during the Bronze Age, when a new metallurgical technology had taken root. This process that has been noted markedly at Ilgynly and Altyn Tepe where, in 1992, Bruno Marcolongo localised important irrigation systems based on the Tedjen*". Unfortunately, Ilgynly had been abandoned during the Chalcolithic Period and both sites, Ilgynly and Altyn-depe, are in the area of the Meana-Chaacha and not in the Tedjen!! Furthermore, it seems that he misunderstood the meaning of the palaeochannel located by Marcolongo and Mozzi [79] some **40 km** from those sites, at the base of the alluvial fans of the Meana-Chaacha system.

Archaeological and historical interpretations

Now we will consider additional archaeological inconsistencies of this publication. Archaeological sections have been discussed above. Others, such as the UTM geographic positioning system are much less important, but we would like to remind the author that the UTM system is almost universally accepted and used and, moreover, that every GPS receiver, with a very simple setting procedure, converts UTM values in many different types of geographic coordinates.

It is much more embarrassing to find mention of "materials" (pottery assemblages?) which would confirm the chronological attribution of phases and sub-phases (in relation to architectural features), but those materials are never described and rarely illustrated (only two sherds!). Nonetheless, these "materials" would be important, if they existed, because they would attest to the presence of an occupation dating to the Chalcolithic period.

Among the archaeological materials one pottery fragment is worth comment. It is a buff ware greenish potsherd (fig. at p. 125), pertaining to sub-phase 1 A and collected "*at the bottom of room n. 35*" (p. 73). Apart from the impossibility of finding room 35 on the site maps, or on the plan of sub-phase 1 A, Rossi-Osmida writes that the painted decoration on this sherd is reminiscent of analogous motifs from the Tedjen area from the Namazga III and IV periods. Also, while referring to the recent publication of Alekshin and Kircho [80], he describes the sherd as

[76] ICW pottery of different traditions is present in the delta and along the Southern Turkmenistan piedmont since the beginning of the Late Bronze Age, but in a very sporadic way (Kutimov 2002; Cattani 2008b).
[77] Cerasetti 2008: 34.
[78] Cattani, Salvatori 2008; Cerasetti 2008.
[79] Marcolongo, Mozzi 1998: 7; 1992; 2000.
[80] Alekshin, Kircho 2005: 348, Table 3, fig. 16. The volume is erroneously referred to by Rossi-Osmida as Masson and Berez-

being from a bottle writing that "… *the 'bottle' forms identified at Altyn-Depe which present this type of decoration seem to be limited to NMZ III*" (p. 73). Fig. 3.16 on p. 348 of the Russian scholars volume illustrates a dish and not a bottle. Furthermore, the decoration motifs on the pottery illustrated at Fig. 3 have no relationship with Rossi-Osmida's published sherd. He also writes that "*However, the three 'ladders' motifs painted on the back of the lip do not appear to belong to this context* [NMZ III?]. *We believe that they should be placed among the 'ladder bands with undulating rungs' type which are present during the Eneolithic Period of the SW of Turkmenistan, in particular in the pottery of the Gorgan, the Atrek and the Sumbar* …". There is no way anyone would make such a statement if they had actually seen the Parkay II pottery [81].

So far, the only Chalcolithic piece illustrated in this volume can be seen on p. 125 (upper left), but no stratigraphic and material context of this sherd is provided.

The Rossi-Osmida's analysis of the architectural aspects of Adzi Kui 9 buildings is particularly funny because, as seen above, he could not refrain from the temptation of looking at Mesopotamian "prototypes" [82]. But his speculation about the earliest evidence of life at the site is even more appealing. At p. 78, writing about a hypothetical "sanctuary", he states that "*It is difficult to ascertain with any degree of accuracy the exact area dedicated to the* ***sacrum****, the choice of which might have been determined by events which remain obscure or, as we have seen elsewhere* [where?], *it is due to a particular configuration of the environment where water (courses, springs etc.) would not have been absent*" and immediately after he continues saying that: "… *this archaic type of 'sacred space' was delimited by structures which, because of* ***their very nature****, tend to disappear with passing of time (ditches, palisades, boundary stones, bethili, dry walls etc.)*". It almost seems that structures and objects have an intrinsic nature and natural inclination to disappear. Endless archaeological literature proves that archaeologists find these kinds of features exist all over the world and in any kind of environment, including arid and hyper-arid geographic contexts.

Among other inconsistencies the following are the most relevant. He writes that huts and temporary shelters, of which there is no documentation in the book, were replaced in sub-phase 2 A by a more permanent settlement (p. 92). On the same page we read that: "*The first village was born which, as far as one can deduce, consisted of at least seven centres distributed in a circle, around which grew new constructions until the entity was transformed into living quarters*". At this point the question arises: What they were before? Perhaps seven temples – the author's favourite interpretation of what he does not understand – following the now abandoned classical explanation that what is not understood must be linked to religion, ritual and the *sacrum*?

Page 92 is particularly full of contradictions. For example, we read that sub-phase 2 A dates to the NMZ IV period (note that on p. 125 it is attributed to the early NMZ V period!) "… *thanks to stratigraphic evidence and laboratory results* [C14 determinations?] *and also (and above all) to the discovery of some guide-finds* [sic!] *which we can compare with certainty*". As usual, the author provides no laboratory data, no stratigraphic evidence, and no material culture assemblages, except, it seems, for the so-called "*guide-find*" illustrated on p. 96, a "*bridle holder*" found [83], together with a "… *cosmetic bottle, a circular metal mirror, a bronze application stick and the foot of an alabaster globelet*" (p. 125). The circumstances of the discovery are described on p. 92 where it says that the object was found "*behind the internal wall of the pomerius* [sic!]" [84] and on p.

KIN 2005, while these two scholars were the general editors of the series. Furthermore, a large number of bibliographic references in the text are not reported in the bibliography at the end of the volume.

[81] Unfortunately, no drawing of this sherd is provided to determine the shape of the pot.

[82] All the critical considerations LAMBERG-KARLOVSKY 2007 unrolls with regards to the often extravagant interpretations Sarianidi put forth about the Gonur North architectures, could be applied to this volume. The funniest is that Lamberg-Karlovsky's paper has been published in a volume edited by LIGABUE and ROSSI-OSMIDA 2007 and thus it seems evident that Rossi did not read it. I am very sorry for the American colleague but Sarianidi school seems to be much more appreciated and handsome than his own.

[83] Again there is no reference to the stratigraphic evidence!

[84] Elsewhere (p. 48 note 12) he explains that *pomerium* is the space between the external and the internal walls of the village fortification wall and that the term derives from *post-moenia*. Not the etymology (*pomerium* in fact comes from *post-moerum*) nor the meaning are correct. When used in military architecture and in this context until the XVI century AD, it means a

95 he writes that the "*pomerium*" was erected in sub-phase 2 B!

The so-called "*bridle holder*" discovery is worth our attention. This object is compared with a "rein-ring" now at the Louvre Museum [85]. This Louvre rein-ring, of unknown provenance, together with another example from the same Museum, and others that supposedly have come from Luristan [86] are, typologically speaking, very close to each other and to the examples from grave PG/789 [87] and PG/800 [88] from the "Royal Cemetery" of Ur, the one found by Thureau-Dangin at the Til Barsip *hypogeum* [89], and the two from Henry Field's Kish excavations [90]. The same type is portrayed on the famous Standard of Ur from grave PG/779, on an alabaster votive tablet from Khafaje and on a limestone tablet fragment from Ur [91]. We can also remember that this type of rein-ring is present on the copper/bronze chariot model from tell Agrab [92] and portrayed on the "stele of vultures" from Tello [93]. The so-called "*bridle holder*" [94] from Adzhi Kui 9, is stylistically and typologically different from the Mesopotamian "rein rings", and these cannot be of help in dating it. Its dating, as usual, should come from contextual data (stratigraphic, radiometric, associated material assemblages). The function of this object is also questionable because the narrow linear openings are not functional to bridle insertion and motion, and the basal shape is not apt to be fixed on the pole or the oxbow. With no technical drawing of the object, we can only tentatively suggest that the object could have been a mirror handle.

According to Rossi-Osmida, the above mentioned object is also proof that a colony of Sumerian-Elamite merchants was based at Adzhi Kui 9. The presence of Sumerian or Elamite merchants in the Bactria-Margiana area can be theoretically possible, but he provides no evidence of any materials normally associated with foreign merchants. We do not refer to pottery but mostly to seals and seal impressions. We know of only one seal in Margiana that dates to the Old Akkadian or to the ED IIIb period [95], but surely it was engraved by a local seal cutter who adapted a typical Mesopotamian-complex motif to local (Bactria-Margiana) aesthetic canons. Moreover, we would expect some evidence of foreign merchants at a centre like Gonur 1 North rather than in a small village like Adzhi Kui 9. In fact, at Gonur 1 North, a wide range of meaningful materials have been found in the settlement and in the graveyard that prove intensive exchanges with a wider world (the Indus Valley, the Iranian plateau, the southern coast of the Arabian/Iranian Gulf, and Elam). Evidence of Mesopotamian materials from Gonur 1 North are an inscribed Akkadian or Ur III cylinder seal [96] and a possibly Ur III duck weight [97].

The Sumerian-Elamite hypothesis is in the chapter titled, "***Reflections on the edge of the excavation***" (pp. 123-137) where Rossi-Osmida elaborates further on announcing that: a) the village fortification wall was erected in the Akkadian period (p. 127); b) that it was encircled by a ditch (that is a fosse, of a rather Lilliputian size: 1.30 m large and 1 m deep!); c) and, finally, that all Middle Bronze Age fortifications of the Murghab delta sites and, of course, that of Adzhi Kui 9, were erected by Sargon of Akkad!!. The exact words are thus reported: "*… the Akkadians maintained and developed the currents of commercial traffic drawn up by the Sumerian ex-colonies and limited themselves to substituting the preceding ruling class with their own meritocracy,*

street-like open space which runs parallel to the inside base of the fortified wall of a city to allow the free movement of defensive troops.

[85] Inv. AO31534.

[86] Calmayer 1969: 8-9, figs. 1a,b and 2.

[87] Woolley 1934: Tab. 167a. A second, copper rein ring was found in this grave, but it was very badly preserved and was lost (*Ibidem*, p. 64).

[88] *Ibidem*: Tab. 166.

[89] Thureau-Dangin, Dunand 1936; Schaeffer 1948: fig. 82.17.

[90] Field 1929: Pl. VII; Colbert 1936: Pl. 21; Muller-Karpe 1985: fig. 1.

[91] Moortgat 1969, fig. 42 and fig. 43 respectively.

[92] Frankfort 1943, Plates 58-59.

[93] Moortgat 1969, fig. 118.

[94] Also the function would to be disputable.

[95] Salvatori 2008a.

[96] Sarianidi 2002, fig. at p. 326.

[97] Sarianidi 2001, Pl. 9.6.

who were charged with administering and 'defending' the territories assigned to them" (p. 131) specifying that: "*The Akkadians almost immediately concentrated their attention on the Margian front, organising a line of fortified defences which, even if episodic and rarefied, were checked on the eastern Bactrian front. In this case* [the Bactrian one [98]?]*, however, more than being a collective project of self-defence, it is more correct to perceive it as a series of individual initiatives promoted by a few polis in order to safeguard their commerce … The reasons which encouraged this choice are not hard to seek. Without doubt it was necessary to cope with those who had been displaced by the Akkadians conquests and also the bands of nomad marauders which infested the region. However, perhaps the Akkadians also hoped to build a bridgehead in Margiana in order to expand further, into Bactria. This must have led the Bactrians to fortify their citadels placed immediately to the east of the Oxus. Be that as it may, the Akkadians were undoubtedly interested in Margiana and it was by no means by pure chance that here arose the first Elamite-type fortresses (cfr. Amiet, 2007: 65)*" (pp. 131-132) [99].

Such a reconstruction of the historical process and the archaeology of Margiana and Bactria represents a complete disconnect between evidence and interpretation. Moreover, how does one reconcile the above cited historic reconstruction with the following Rossi-Osmida statement?: "*Indeed, in our opinion, archaeological research in Margiana can only be carried out today by means of this type of work: excavate and document in order to understand. Only at the end, when the elements we have are more numerous and documented, can we put forward new theories and formulate new hypotheses*" (p. 19). With this interpretation, he contradicts himself.

Anthropomorphic figurines

Now a few words about the chapter that Rossi-Osmida devotes to the anthropomorphic figurines (pp. 145-191). First, the provenance of figurines considered in his typological analysis is not mentioned anywhere in the book, and Mesopotamian parallels are frequently used without consideration of chronological limits.

The ghost of the immigration theory re-emerges in this same chapter: "*We are … led to believe that the* ***verified exodus*** *from the Tedjen to the Murghab during the Late Bronze Age was in the direction of inhabited centres already familiar to the peoples of the Tedjen and that, on the basis of data in our possession, that colonising was concentrated initially to the north of Margiana and in particular around the Oasis of Kelleli where Masimov notes the discovery of 9 statuettes*" (p. 154). It need to be stated that the Tedjen deltas were scantly inhabited during the entire Bronze Age, while the area was intensively inhabited during the Chalcolithic period [100]. Furthermore, it is hard to imagine the immigration of a "Chalcolithic" population, during the Late Bronze Age, borrowing their statuettes and establishing settlements of the Middle Bronze Age. This chronological puzzle is rather unsolvable!

The reference to Masimov is rather improper as the Kazakhstani scholar was only pointing out the similarity between the pottery statuettes found in the Middle Bronze Age sites of the Murghab delta with one specific Middle Bronze Age type of statuette known from piedmont sites, and in particular at Altyn-depe (not the Tedjen deltas, but the Meana-Chaacha system!). The single contribution of this chapter is the publication, even without any contextual information, of new found pottery statuette specimens and some pieces of composite stone statuettes.

As for the composite stone statuettes, a calcite head with chlorite hairs or a hat from a composite statuette was found on the surface of Adzhi Kui 1 (p. 176) and a second head was found inside a pottery jar in Grave 18 (supposedly in the cemetery of Adzhi Kui 1). We deeply regret the absence of any mention of its context as it would be important to know if it is within the Middle or Late Bronze Age contexts.

Complete specimens of composite statuettes

[98] In Italian text the sentence sounds as: "In quest'ultimo caso" which can be literally translated as "in the last case".

[99] Unfortunately Amiet 2007 is not reported in the bibliography. The author is probably referring, but we cannot be sure, to the paper by P. Amiet in the book by Ligabue and Rossi-Osmida (eds.), 2007. It is highly possible that this interesting paper, updating the well known book on the Inter-Iranian exchanges (Amiet 1986), surely misunderstood by Rossi, was in a certain way the basis of the author rewriting of the Akkadian history. Anyway, in Amiet's paper there is no mention of Elamite-type fortresses in Margiana and Bactria!!!!

[100] Kohl 1984: 73-103.

have been found in the MBA graveyard at Gonur [101], where more than 90% of the graves were pillaged during the LBA [102]. At Gonur 1 South (LBA settlement) a calcite statuette head was found inside a niche close to the northern gate of the village [103] and probably came from the pillaged Gonur MBA graveyard as did many other MBA objects found in LBA sites. The problem of primary and secondary deposition contexts is noteworthy [104]. About the Quetta finding that Rossi-Osmida credits as being of a primary context, we have to emphasise that, according to Jarrige and Hassan [105] it consists of two clusters, separated from one another by 3 meters. The first contained human remains associated with a metal vessel and several ceramic pots. The second is clearly a hoard [106] with complete and fragmentary objects [107] among which are many golden scraps. The pottery, in both clusters, can be linked with Bactria and Margiana assemblages of the LBA. The material (entire, fragmentary and snipped objects other than pottery vessels) is clearly a secondary deposition and we guess that it is likely the same for the AK1 Grave 18 specimen. If so, the hypothesis that "*… the other parts of the statuette (the base and body) might have been made of wood*" (p. 176) could be the umpteenth Pindaric flight of the author.

The list of unsubstantiated, incorrect and contradictory statements from this book could be much longer, but the above examples should be enough to challenge the credibility of this newest and uncontrolled approach to archaeological excavation and historical explanation. It is surprising to see how much attention some distinguished French colleagues have given the author who appears to disdain scientific control [108].

It is also surprising that, in an era of money shortages for scientific research, someone with no accredited scientific position has access to such substantial public funds. The most severe outcome of this situation could be a negative image of Italian archaeology in the scientific community.

REFERENCES

Adams R. MaC., Nissen H.-J. 1972, *The Uruk Countryside*. Chicago.

Alekshin V. A., Kircho L. B. 2005, *Khronologya epokhi posdnego Eneolita - srednej bronzy sdrednej Azii (pogrebeniya Altyndepe)*. Sankt-Peterburg.

Amiet P. 2007, L'Âge des échanges Inter-Iraniens 3500-1700 avant J.-C. In: Ligabue, Rossi-Osmida (eds.) 2007: 64-87.

Ammerman A. J. 1981, Surveys and Archaeological Research. *Annual Review of Anthropology* 10: 63-88.

Askarov A. A. 1973, *Sapallitepa*. Tashkent.

Askarov A. A 1977, *Drevnezemledel'cheskaya kultura epokhi bronzi yuga Uzbekistana*. Tashkent.

Banning E. B. 2002, *Archaeological Survey*. (Manuals in Archaeological Method, Theory, and Technique). New York.

Barker Ph. 1977, *Techniques of Archaeological Excavation*. London.

Berezkin Yu. E. 2001, *Kvartal'nij centr epokhi bronzy na Altyndepe.* In: Kircho (ed.) 2001a: 40-59.

Berezkin Yu. E., Solovyeva N. F. 1998, Paradnye pomexenia ilginly-depe, predvaritelinia tipologia. *Archeologicheskie vesti* 5: 78-115.

[101] Sarianidi 2007: Figs 38-39 (Grave 2900), Fig. 53 (Grave 1799); see also the unbaked clay analogous figurines from the Gonur North settlement (Dubova 2006: 45).
[102] Salvatori 1995: 5.
[103] Sarianidi 1998: fig. 17.1.
[104] Salvatori 2008b: 88-90.
[105] Jarrige and Hassan 1989: 153.
[106] Not a cenotaph as suggested by Amiet 2007: 77.
[107] Jarrige 1987: fig. 4.
[108] I refer primarily to the paper of Rossi-Osmida 2006 where at the beginning of his article he describes the discovery of the MBA graveyard at Gonur and the motifs leading to its excavation in the following way: "Notre objectif conconsistait alors en l'exploration systématique d'un site bactriano-margien, dés lors que les matériels archéologiques parvenus en Occident étaient quasiment inexploitables d'un point de vue scientifique, privés qu'ils étaient de leurs indispensables données contextuelles" (p. 47). In this sentence which is only slightly modified from Salvatori 1994a: 663, he takes credit for a research that he did not do, either now or in the past.

Bonora G. L., Vidale M. 2008, An Aspect of the Early Iron Age (Yaz I) Period in Margiana: Ceramic Production at Site No. 999. In: Salvatori and Tosi (eds.) 2008a: 153-194.

Boucharlat R., Francfort H.-P., Lecomte O. 2005, The Citadel of Ulug Depe and the Iron Age Archaeological Sequence in Southern Central Asia. *Iranica Antiqua* 40: 479-514.

Brice W. C. (ed.) 1978, *The Environmental History of the Near and Middle East*. London-New York.

Brooks N. 2006, Cultural responses to aridity in the Middle Holocene and increased social complexity. *Quaternary International* 151: 29-49.

Bubenzer O., Bolten A. and Darius F. (eds.) 2007, *Atlas of Cultural and Environmental Change in Arid Africa*. (Africa Praehistorica 21). Köln.

Butzer K. W. 1978, The Late Prehistoric Environmental History of the Near East. In: Brice 1978: 5-12.

Cattani M. 1998, Excavations at Takhirbai-depe (thr-1) (1992-1993). Preliminary Notes. In: Gubaev, Koshelenko and Tosi (eds.) 1998: 97-104.

Gubaev, Koshelenko and Tosi (eds.) 2008a Excavations at Sites No. 1211 and No. 1219 (Final Bronze Age). In: Salvatori and Tosi (eds.) 2008a: 119-132.

Gubaev, Koshelenko and Tosi (eds.) 2008b The Final Phase of the Bronze Age and the "Andronovo Question" in Margiana. In: Salvatori and Tosi (eds.) 2008a: 133-151.

Cerasetti B. 2008, A GIS for the Archaeology of the Murghab Delta. In: Salvatori and Tosi (eds.) 2008a: 29-37.

Colbert E. H. 1936, Was the Extinct Giraffe (Sivatherium) Known to the Early Sumerians?. *American Anthropologist*, N.S. Vol. 38 (4): 605-608.

Coolidge J. W. 2005, *Southern Turkmenistan in the Neolithic: a petrographic case study*. Archaeopress. Oxford.

Cremaschi M. 1998, Palaeohydrography and Middle Holocene Desertification in the Northern Fringe of the Murghab Delta. In: Gubaev, Koshelenko and Tosi (eds.) (1998): 15-25.

De Guio A. and Secco G. 1988, Archaeological applications of the 'Percolation Method'. In: Rahtz 1988: 63-93.

Delougaz P. and Lloyd S. 1942, *Pre-Sargonid Temples in the Diyala Region*. (Oriental Institute Publications 58) Chicago.

Deshayes J. (ed.) 1977, *Le Plateau iranien et l'Asie centrale des origines a la conquete islamique*. Paris.

Drennan R. D., Peterson C. E. 2004, Comparing archaeological settlement systems with rank-size graphs: a measure of shape and statistical confidence. *Journal of Archaeological Science* 31: 533-549.

Dubova N. A. 2004, Mogil'nik i carskij nekropol' na beregah bol'shogo bassejna severnogo Gonura. In: Kosarev, Koshkin and Dubova (eds.) 2004: 254-281.

Dubova N. A. 2006, Qui vivait à Gonur Dépé?. *Dossiers d'Archeologie* 317: 40-45.

Falconer, S. E. and Savage S. H. 1995, Heartlands and hinterlands: alternative trajectories of early urbanization in Mesopotamia and the southern Levant. *American Antiquity* 60:37-58.

Field H. 1929, *The Field Museum-Oxford University Expedition to Kish, Mesopotamia 1923-29*. (Field Museum of Natural History Anthropology Leaflet 28). Chicago.

Francfort H.-P. 1989, *Fouilles de Shortughai. Recherches sur l'Asie centrale protohistorique*. 2 volls. Paris.

Francfort H.-P. 2007, L'art de la Civilisation de l'Oxus à l'Âge du Bronze (2300-1700 av. J.-C. env.). In: Ligabue and Rossi-Osmida (eds.) 2007: 102-127.

Francovich R. Manacorda D. (eds.) 1990, *Lo Scavo Archeologico: dalla Diagnosi all'Edizione*. Firenze.

Frankfort H. 1943, More Sculpture from the Diyala Region. Chicago.

Frankfort H. 1969, *The Art and Architecture of the Ancient Orient*. (4th ed.). London.

FrÉdÉric L. 1967, *Manuel pratique d'archéologie*. Paris.

Gardin J.-C. (ed.) 1985, *L'archéologie de la Bactriane ancienne*. Paris.

Gardin J.-C. (ed.) 1988, *L'Asie centrale et les rapports avec les civilisations orientales des origines a l'age du Fer*. Paris.

Gerasimov I. P. 1978a, Ancient Rivers in the Deserts of Soviet Central Asia. In: Brice (ed.) 1978: 319-334.

Gerasimov I. P. 1978b, The Past and the Future of the Aral and the Caspian Seas. In: Brice (ed.) 1978: 335-349.

Grant J., Gorin S., Fleming N. 2005, *Archaeology Coursebook*. London.

Green K. 2002, *Archaeology: An Introduction*. 4th ed., London.

Gubaev A., Koshelenko G., Tosi M. (eds.) 1998, *The Archaeological Map of the Murghab Delta. Preliminary Reports 1990-95*. Reports and Memoirs. Series Minor, III. Roma.

Harris D. R., Gosden C., Charles M. P. 1996, Jeitun: Recent excavations at an early Neolithic site in Southern Turkmenistan. *Proceedings of the Prehistoric Society* 62: 423-442.

Harris D. R., Masson V. M., Berezkin Y. E., Charles M. P., Gosden C., Hillman G. C., Kasparov A. K., Korobkova G. F., Kurbansakhatov K., Legge A. J., Limbrey S. 1993 Investigating early agriculture in Central Asia: new research at Jeitun, Turkmenistan. *Antiquity* 67 (255): 324-338.

Harris E. C. 1989, *Principles of Archaeological Stratigraphy, London*.

Herrmann G., Kurbansakhatov K. (eds.) 1994, The International Merv Project, Preliminary Report on the Second Season (1993). *Iran* 32: 53-75.

Herrmann G., Kurbansakhatov K. (eds.) 1995, The International Merv Project. Preliminary Report on the Third Season (1994). *Iran* 33: 31-60.

Herrmann G., Kurbansakhatov K., Simpson St J. (eds.) 1996, The International Merv Project. Preliminary Report on the Fourth Season (1995). *Iran* 34: 1-22.

Herrmann G., Kurbansakhatov K., Simpson St J. (eds.) 1997, The International Merv Project. Preliminary Report on the Fifth Season (1996). *Iran* 35: 1-33.

Herrmann G., Kurbansakhatov K., Simpson St J. (eds.) 1998, The International Merv Project. Preliminary Report on the Sixth Season (1997). *Iran* 36: 53-75.

Herrmann G., Kurbansakhatov K., Simpson St J. (eds.) 1999, The International Merv Project. Preliminary Report on the Seventh Season (1998). *Iran* 37: 1-24.

Herrmann G., Kurbansakhatov K., Simpson St J. (eds.) 2000, The International Merv Project. Preliminary Report on the Ninth Season (2000), *Iran* 39: 31-33.

Herrmann G., Masson V. M., Kurbansakhatov K. (eds.) 1993, The International Merv Project. Preliminary Report on the First Season (1992). *Iran* 31: 39-62.

Hester Th. R., Heizer R. F., Graham J. A. 1975, *Field methods in Archaeology*. 6th ed., Palo Alto.

Hiebert F. T. 1994, *Origins of the Bronze Age Oasis Civilization in Central Asia.* (American School of Prehistoric Research Bulletin 42), Cambridge (MA.).

Hiebert F. T., Kurbansakhatov K. 2003, *Central Asian Village at the Dawn of Civilization, Excavations at Anau, Turkmenistan*. (University Museum Monograph, 116), Philadelphia.

Hole F., Heizer R. F. 1977, *Prehistoric Archaeology. A Brief Introduction*, New York.

Johnson G. A. 1980, Rank-Size Convexity and System Integration: a View from Archaeology. *Economic Geography* 56 (3), 234-247.

Johnson G. A. 1982, Organizational Structure and Scalar Stress. In: Renfrew C., Rowlands, M. J. and Abbott Segraves B. (eds.), *Theory and Explanation in Archaeology*. London: 389-421.

Joukowsky M. 1980, *A Complete Manual of Field Archaeology. Tools and Techniques of Field Work for Archaeologists*, Englewood Cliffs.

Kasparov A. K. 1994, Patterns in Caprine Exploitation at Ilgynly-depe, Turkmenystan. In: Kozintsev, Masson, Solovyeva, Zuyev (eds.) 1994: 36-38.

Kircho L. B. 1988, The Beginning of the Early Bronze Age in Southern Turkmenia on the Basis of Altyn-depe Materials. *East and West* 38 (1-4): 33-64.

Kircho L. B. 1994**,** New Studies of the Late Chalcolithic at Altyn-depe, Turkmenistan. In: Kozintsev, Masson, Solovyeva and Zuyev (eds.) 1994: 39-43.

Kircho L. B. 2000, Bogatoe pogrebenie epokhi srednej bronzy na Altyn-depe. *Arkheologicheskie Vesti* 7: 70-76.

Kircho L. B. 2001a, *Osobennosti proizvodstva poseleniya Altyndepe v epokhu paleometalla*. (Materialy Yuzhno - Turkmenistanskoj Arkheologiches-koj Compleksnoj Ekspedizii, 5), Sankt-Peterburg.

Kircho L. B. 2001b**,** Metallicheskie izdelija Altyn-Depe. In: Kircho (ed.) 2001a: 60-84.

Kircho L. B. 2001c, Osnoviye tipy sooruženij I tekhnologija stroitep'stva v epokhi pozdnego eneolita i rannej bronzi. In: Kircho (ed.) 2001a: 5-39.

Kircho L. B. 2004, Formirovanie drevnejshej protogorodskoj civilizacii bronzovogo veka Srednej Azii (po materialam Altyn-depe). In: Kosarev, Koshkin and Dubova (eds.) 2004: 142-160.

Kircho L. B., Salvatori S., Vidale M. n.d**.,** A Topographic and Stratigraphic Map of Altyn-depe: New Evidence on Craft Activities from Surface Analysis'. Paper presented at the Fifteenth International Conference on South Asian Archaeology, 5th-9th July 1999, Leiden.

Khlopin I. N. 1997, *Eneolit Iugo-Zapadnogo Turkmenistana*, St. Petersburg.

Kohl P. L. (ed.) 1981, *The Bronze Age Civilization of Central Asia: Recent Soviet Discoveries,* New York.

Kohl P. L. in collaboration with Francfort H.-P., Gardin J.-Cl. 1984, *Central Asia. Palaeolithic beginnings to the Iron Age*, Paris.

Kohl P. L. 2007, *Making of Bronze Age Eurasia*, Cambridge.

Korobkova G. F., Sharovskaya T. A. 1994, Stone Tools from Ilgynly-depe (Turkmenistan): the Evidence from Use-wear Analysis. In: Kozintsev, Masson, Solovyeva and Zuyev (eds.) (1994): 27-30.

Kosarev M. F., Koshkin P. M., Dubova N. A. (eds.) 2004, *Near the Sources of Civilizations. The Issue in Honor of the 75-Anniversary of Victor Sarianidi*, Moscow.

Kozintsev A. G., Masson V. M., Solovyeva N. F. and Zuyev V. Yu. (eds.), 1994 *New Archaeological Discoveries in Asiatic Russia and Central Asia*. (Archaeological Studies No. 16), Sankt-Petersburg.

Kuhn Th. S. 1996, *The Structure of Scientific Revolutions*. (3rd ed.), Chicago.

Kuper R. (ed.) 1989, *Forshungen zur Umweltgeschichte der Ostsahara*. (Africa Praehistorica 2), Köln.

Kutimov Yu. G. 2002, Nekotorye aspekty razvitiya i absolyutnoj datirovki Tazabag'yabskoj kul'tury yuzhnogo Priaral'ya (po materialam mogil'nika Kokcha 3). *Arkheologicheskie Vesti* 9: 189-203.

Lamberg-Karlovsky C. C. 2003, Civilization, State, or Tribes? Bactria and Margiana in the Bronze Age. *The Review of Archaeology* 24(1): 11-19.

Lamberg-Karlovsky C. C. 2007, The BMAC. Pivot of the Four Quarters: Temples, Palaces, Factories and Bazaars?. In: Ligabue and Rossi-Osmida (eds.) 2007: 88-101.

Lecomte O. 2004a, Fouilles d'Ulug Depe (Turkménistan). *Orient Express, Notes et nouvelles d'archéologie orientale.* 2004/2 - juillet: 33-40.

Lecomte O. 2004b, A group of Yaz II-III stamp-impressions from Ulug Depe (Turkmenistan). In: Kosarev, Koshkin and Dubova (eds.) 2004: 168-182.

Lecomte O. 2005, Du Piémont au Désert, les fouilles d'Ulug Depe, Turkmenistan. In: *Archéologies, 20 ans de Recherches Françaises dans le Monde.* Maisonneuve et Larose, ADPF/ERC: 574-576.

Lecomte O. 2007, An Iron Age Urban Settlement Revealed by Magnetic Survey: The Case of Ulug Depe (Turkmenistan). In: Posselt, Zickgraf and Dobiat (eds.) (2007): 99-110.

Lecomte O. (ed.) 2006, Turkménistan, un berceau culturel en Asie Centrale. *Dossier d'Archéologie n° 317*, octobre 2006.

Lecomte O., Francfort H.-P. 2002, Irrigation et société en Asie centrale des origines à l'époque achéménide. *Annales* 57 (3): 625-663.

Lecomte O., Francfort H.-P., Boucharlat R., Mamedov M. 2004, Recherches archéologiques récentes à Ulug Dépé (Turkménistan). *Paléorient* 28: 123-133.

Ligabue G., Rossi-Osmida G. (eds.) 2007, *Sulla Via delle Oasi. Tesori dell'Oriente Antico*, Trebaseleghe.

Lioubimtseva E. 2004, Climate change in arid environments: revisiting the past to understand the future. *Progress in Physical Geography* 28 (4): 502-530.

Lioubimtseva E., Cole R., Adams J. M., Kapustin G. 2005, Impacts of climate and land-cover changes in arid lands of Central Asia. *Journal of Arid Environments* 62: 285-308.

MacDonald B., Herr L. G., Neeley M. P., Gagos T., Moumani K., Rockman M. 2004, *The Tafila-Busayra Archaeological Survey 1999-2001, West-Central Jordan.* (American Schools of Oriental Research Archaeological Reports 9). Boston.

Mamedov M. 1993, The Architectural Lay-out of the Togolok-21 Complex: an Analysis. *IASCCA information bulletin* 19: 228-231.

Marcolongo B., Mozzi P. 1992, Use of Soyuz KFA 1000 Cosmic Photos for a Detailed Palaeoenvironmental Reconstruction of Murgab's Inner Delta (Turkmenistan). *Bollettino Associazione Italiana di Cartografia* 86: 13-24.

Marcolongo B., Mozzi P. 1998, Outline of Recent Geological History of the Kopet-Dagh Mountains and the Southern Kara-Kum. In: Gubaev, Koshelenko and Tosi (eds.) 1998: 1-13.

Marcolongo B., Mozzi P. 2000, Holocene geomorphological evolution of the eastern Kopet Dag piedmont plain: a preliminary geomorphological perspective. *Archeological News* 7: 33-40.

Masimov I. S. 1979, Izuchenie pamyatnikov epokhi bronzy nizov'ev Murgaba. *Sovetskaya Arkheologiya* 1: 111-131.

Masimov I.S. 1981a, The Study of Bronze Age Sites in the Lower Murghab. In: Kohl (ed.) 1981: 194-220.

Masimov I. S. 1981b, Raskopki ve Kellinskom oazise. *Arkheologicheskie Otkritiya - 1980 Goda*: 466-467.

Masimov I. S. 1984 Zhiloi dom na Kelleli. *Pamyatniki Turkmenistana* 2/38: 16-18.

Masimov I. S. 1986 Novie issledovaniya pamyatnikov epokhi bronzy na Murgabe. In: Masson (ed.) 1986: 171-181.

Masimov I. S., Lyapin A. A. 1977, Arkheologo-topograficheskie raboti ve nizov'yokh drevnego Murgaba. *Arkheologicheskie Otkritiya*, 1976 Goda: 552.

Masson V. M. 1971 *Poselenie Djeitun. (Materiali I issledovaniya po arkheologii SSSR. No. 180).* Nauka, Moscow.

Masson V. M. 1988, *Altyn-depe*, Philadelphia.

Masson V. M. (ed.) 1986, *Drevnie Civilizacii Vostoka*, Tashkent.

Masson V. M., Harris D. R. 1994, New Excavations at Jeitun, Turkmenistan: The First Five Years. In: Kozintsev, Masson, Solovyeva, Zuyev (eds.) 1994: 14-16.

Masson V. M., Berezkin Yu. E., Solovyeva N. F. 1994, Excavations of Houses and Sanctuaries at Ilgynly-depe Chalcolithic Site, Turkmenistan. In: Kozintsev, Masson, Solovyeva and Zuyev (eds.) 1994: 18-26.

Mayewski P. A., Rohling E. E., Stager J. C., Karlén W., Maasch K. A., Meeker L. D., Meyerson E. A., Gasse F., van Kreveld S., Holmgren K., Lee-Thorp J., Rosqvist G., Rack F., Staubwasser M., Schneider R. R. and Steig E. J. 2004, Holocene climate variability. *Quaternary Research* 62: 243-255.

Moortgat A. 1969, *The Art of Ancient Mesopotamia*, London.

Muller-Karpe M. 1985, Antlers of the Stag Rein Ring from Kish. *Journal of Near Eastern Studies* 44 (1): 57-58.

Parpola A., Koskikallio P. (eds.) 1994, *South Asian Archaeology 1993. Proceedings of the Twelfth International Conference of European Association of South Asian Archaeologists held in Helsinki University, 5-9 July 1993*. (Annales Academiae Scientiarum Fennicae, Series B, 271), Helsinki.

Posselt M., Zickgraf B. Dobiat C. (eds.) 2007, *Geophysik und Ausgrabung; Einsatz und Auswertung zerstörungsfreier Prospektion in der Archäologie*, Rahden/West.: Leidorf.

P'yankova L. 1989, Pottery Complexes of Bronze-Age Margiana (Gonur and Togolok 21). *IASCCA Information Bulletin* 16: 27-54.

P'yankova L. 1994, Central Asia in the Bronze Age: sedentary and nomadic cultures. *Antiquity* 68 (259): 372-387.

Rahtz, S. P. Q. (ed.) 1988, *Computer and Quantitative Methods in Archaeology*, Oxford.

Renfrew C., Bahn P. 1991, *Archaeology. Theories, Methods and Practice*, London.

Rossi-Osmida G. 2006, Les recherches du Centro Studi Ricerche Ligabue en Margiane. *Dossiers d'Archeologie* 317: 46-51.

Rossi-Osmida G. 2007, *Adji Kui Oasis. Vol. I. La Cittadella delle Statuette*, Trebaseleghe

Rossi-Osmida G. (ed.) 2002, *Margiana. Gonur-depe Necropolis. 10 years of excavations by Ligabue Study and Research Centre*, Trebaseleghe.

Rova E. (ed.) 2000, *Patavina Orientalia Selecta*, Padova.

Salvatori S. 1993, The Discovery of the Graveyard of Gonur-depe 1 (Murghab Delta, Turkmenistan): 1992 Campaign Preliminary Report. *Rivista di Archeologia* XVII: 5-13.

Salvatori S. 1994a, A Late Third Millennium Graveyard at Gonur Tepe 1 (Murghab Delta, Turkmenistan). In: Parpola and Koskikallio (eds.) 1994: 657-666.

Salvatori S. 1994b, Excavations at the Namazga V Late Graveyard of Gonur 1 (Murghab Delta, Turkmenistan). Preliminary Report on the 1993 Field Season. *Rivista di Archeologia* XVIII: 15-39.

Salvatori S. 1995, Gonur-depe 1 (Margiana, Turkmenistan): the Middle Bronze Age Graveyard. Preliminary Report on the 1994 Excavation Campaign. *Rivista di Archeologia* XIX: 5-37.

Salvatori S. 1998, Margiana Archaeological Map: The Bronze Age Settlement Pattern. In: Gubaev, Koshelenko and Tosi (eds.) 1998: 57-66.

Salvatori S. 2000, Il cimitero del Bronzo Medio a Gonur depe 1 (Delta del Murghab, Turkmenistan): alcune rifles-

sioni sulla Margiana e la Battriana protostoriche. In: Rova (ed.) 2000: 35-70.

Salvatori S. 2002, Project "Archaeological Map of the Murghab Delta"(Turkmenistan): Test trenches at the Bronze Age Sites of Adzhi Kui 1 and 9. *Ancient Civilizations from Scythia to Siberia* 8 (1-2): 107-178.

Salvatori S. 2003, Pots and Peoples: the "Pandora's Jar" of Central Asia Archaeological Research. On two recent books on the Gonur Middle Bronze Age Graveyard. *Rivista di Archeologia* XXVII: 5-20.

Salvatori S. 2008a, A New Cylinder Seal from Ancient Margiana: Cultural Exchange and Syncretism in a "World Wide Trade System" at the End of the 3rd Millennium BC. In: Salvatori and Tosi (eds.) 2008a: 111-118.

Salvatori S. 2008b, Cultural Variability in the Bronze Age Oxus Civilisation and its Relations with the Surrounding Regions of Central Asia and Iran. In: Salvatori and Tosi (eds.) 2008a: 75-98.

Salvatori S. 2008c, The Margiana Settlement Pattern from the Middle Bronze Age to the Parthian-Sasanian Period: A Contribution to the Study of Complexity. In: Salvatori and Tosi (eds.) 2008a: 57-74.

Salvatori S., Tosi M. (eds.) 2008a, *The Bronze Age and Early Iron Age in the Margiana Lowlands. Facts and Methodological Proposal for a Redefinition of the Research Strategies*. Oxford.

Salvatori S., Tosi M. (eds.) 2008b, Introduction. In: Salvatori, Tosi (eds.) 2008a: x-xiv.

Salvatori S., Vidale M. 1997, *Shahr-i Sokhta 1975-1978: Central Quarters Excavations* (IsMEO Reports), Rome.

Sarianidi V. I. 1977, *Drevnie zemledel'zy Afganistana*, Moskva.

Sarianidi V. I. 1986, Le complexe cultuel de Togolok 21 en Margiane. *Arts Asiatiques* XLI: 5-21.

Sarianidi V. I. 1990a, Ein aussergewöhnlicher Tempelkomplex von Togolok in Turkmenien. *Das Altertum* 36: 167-176.

Sarianidi V. I. 1990b, *Drevnosti strany Margush*, Ashkhabad.

Sarianidi V. I. 1993, Excavations at Southern Gonur. *Iran* XXXI: 25-37.

Sarianidi V. I. 1998, *Margiana and Protozoroastrism*, Athens.

Sarianidi V. I. 2001, *Necropolis of Gonur and Iranian Paganism*, Moscow.

Sarianidi V.I. 2002a, The Fortification and Palace of Northern Gonur. *Iran* XL: 75-87.

Sarianidi V. I. 2002b, *Margush. Ancient Oriental Kingdom in the Old Delta of the Murghab River*, Ashgabat.

Sarianidi V. I. 2004, Strana Margush otkryvaet svoi tajiy dvorcobo-kul'tovyj ansambl' cevernogo Gonura. In: Kosarev, Koshkin and Dubova (eds.) 2004: 229-253.

Sarianidi V. I. 2005, *Gonurdepe. City of Kings and Gods*, Ashgabat.

Sarianidi V. I. 2007, *Necropolis of Gonur*, Athens.

Schaeffer C. F. A. 1948, Stratigraphie Comparée et Chronologie de l'Asie Occidentale (IIIe et IIe millénaires), London.

Solovyeva N. F. 1998, Stenopisi Ilgynly-depe. *Archeologiceskie vestni* 5: 117-122.

Solovyeva N. F. 2000, The Wall-Painting of Ilgynly Tepe. In: Taddei and De Marco (eds.) 2000 Vol. I: 453-465.

Solovyeva N. F. 2005, *Chalcolithic Anthropomorphic Figurines from Ilgynly-depe, Southern Turkmenistan: Classification, analysis and catalogue*. (BAR S1336), Oxford.

Solovyeva N. F., Yegor'kov A. N., Galibin V. A., Berezkin Y. E. 1994, Metal Artifacts from Ilgynly-depe, Turkmenistan. In: Kozintsev, Masson, Solovyeva, Zuyev (eds.) (1994): 31-35.

Taddei M., De Marco G. (eds.) 2000, *South Asian Archaeology 1997* (2 Vols.), Rome.

Tosi M. 1968, Excavations at Shahr-i Sokhta, a Chalcolithic Settlement in the Iranian Sistan. Preliminary Report on the First Campaign, October-December 1967. *East and West* 18 (1-2): 9-66.

Tosi M. 1969, Excavations at Shahr-i Sokhta. Preliminary Report on the Second Campaign, September-December 1968. *East and West* 19 (3-4): 283-386.

Tosi M. (ed.)1983, *Prehistoric Sistan, 1*, Rome.

Trigger B. G. 1989, *A History of Archaeological Thought*, Cambridge.

Tsvetsinskaya E. A., Vainberg B. I., Glushko E. V. 2002, An integrated assessment of landscape evolution, long-term climate variability, and land use in the Amudarya Prisarykamysh delta. *Journal of Arid Environments* 51: 363-381.

Thureau-Dangin F., Dunand M. 1936, *Til-Barsib*, Paris.

Wendorf F., Schild R. and Associates 2001, *Holocene Settlements of the Egyptian Sahara. Volume 1. The Archaeology of Nabta Playa*, New York.

Westman A. (ed.) 1994, *Archaeological site manual*. 3rd ed., London.

Wheeler M. 1954, *Archaeology from the Earth*, Oxford.

Wilkinson T. J. 2003, Archaeological Landscapes of the Near East, Tucson.

Wilkinson T. J. 2004, *Excavations at tell es-Sweyhat, Syria. Volume 1. On the Margin of the Euphrates. Settlement and Land Use at Tell Es-Sweyhat and in the Upper Lake Assad Area, Syria*, Chicago (Oriental Institute Publications. Volume 124).

Williams T. and Kurbansakhatov K. (eds.) 2002, The Ancient Merv project, Turkmenistan: preliminary report on the first season (2001). *Iran* 40: 9-57.

Williams T. and Kurbansakhatov K. (eds.) 2003, The Ancient Merv project, Turkmenistan: preliminary report on the second season (2002). *Iran* 41: 139-170.

Woolley C. L. 1934, *Ur Excavations II. The Royal Cemetery*, London.

Wright H. T. (ed.) 1979, *Archaeological Investigations in Northeastern Xuzesatan, 1976*, An Arbor.